Seventh Grade Math Essential Learnings

Students will be able to:

- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units
- Recognize and represent proportional relationships between quantities
- Decide whether two quantities are in a proportional relationship
- Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships
- Represent proportional relationships by equations
- Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0,0) and (1,r) where r is the unit rate
- Use proportional relationships to solve multistep ratio and percent problems
- Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram
- Describe situations in which opposite quantities combine to make 0
- Understand p+q as the number located a distance lql from p, in the positive or negative direction depending on whether q is positive or negative.
- Apply properties of operations as strategies to add and subtract rational numbers
- Apply and extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers
- Understand that multiplication is extended from fractions in rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property leading to products such as (-1)(-1)=1 and the rules for multiplying signed numbers
- Apply properties of operations as strategies to multiply and divide rational numbers
- Convert rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats
- Apply procedures of operations as strategies to add, subtract, factor, and expand

linear expressions with rational coefficients
- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form using tools strategically
- Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems by reasoning about the quantities
- Solve word problems leading to equations of the form px+q=r and p(x+q)=r, where p,q, and r are specific rational number
- Solve word problems leading to inequalities of the form px+q>r or px+q<r where p,q,and r are specific rational numbers

Seventh Grade Literacy Essential Learnings

Students will be able to:

- Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text
- Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas
- Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone
- Assess how point of view or purpose shapes the content and style of a text
- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence
- Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content
- Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences
- Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively
- Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally
- Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.
- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking
- Demonstrate command of the conventions of standard English capitalization,

punctuation, and spelling when writing
- Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression

Seventh Grade Science Essential Learnings

Students will be able to:

- Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells
- Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function
- Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells
- Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories
- Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms
- Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism
- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem
- Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem
- Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations
- Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems
- Evaluate competing design solutions for maintaining biodiversity and ecosystem services
- Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively
- Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms

- Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism
- Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation
- Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms
- Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment
- Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time
- Develop models to describe the atomic composition of simple molecules and extended structures
- Gather and make sense of information to describe that synthetic materials come from natural resources and impact society
- Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed
- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred
- Develop and use a model to describe how the total number of atoms do not change in a chemical reaction and thus mass is conserved
- Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions
- Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success
- Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved

Seventh Grade Social Studies Essential Learnings

Students will be able to:

- Explain how historians use a variety of sources to explain the past
- Read and comprehend a historical passage to identify basic factual knowledge and

the literal meaning by indicating who was involved, what happened,where it happened, what events led to the development, and what consequences or outcomes followed

- Explain what archaeologists have learned about Paleolithic and Neolithic societies
- Explain the importance of the natural environment in the development of agricultural settlements in different locations
- Describe and use themes of history to study patterns of change and continuity
- Use historical and modern maps and other sources to locate, describe,and analyze major river systems and discuss the ways these physical settings supported permanent settlements and development of early civilizations
- Examine early civilizations to describe their common features, including environment, economies, and social institutions
- Compare and contrast the defining characteristics of a city-state, civilization, and empire
- Identify and describe the core beliefs of major world religions and belief systems, including Hinduism, Judaism, Buddhism, Christianity, Confucianism, Sikhism and Islam
- Explain how different technologies were used in the era being studied

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